

**WHAT IS CLAIMED IS:**

1. A method for determining whether a call forward busy service is enabled on a telephone line, the method comprising:

5 placing a first test call across a network to the telephone line;  
receiving first signaling data through the network in response to the first test call;  
evaluating the first signaling data to determine whether the first test call is inspiring a ringing condition;

10 placing a second test call across the network conditioned on whether the first signaling data indicates that the first test call is determined to be inspiring a ringing condition, the second test call being placed while the first test call remains inspiring ringing;  
receiving second signaling data through the network in response to the second test call;

15 evaluating the second signaling data to determine whether the second test call is inspiring a ringing condition;

concluding whether a call forward busy service is enabled on the telephone line based on whether the second test call is determined to be inspiring a ringing condition.

20 2. The method of claim 1, wherein the telephone network comprises a circuit-switched voice network.

3. The method of claim 1, wherein the telephone network comprises a packet-switched data network.

25 4. The method of claim 1, wherein the duration of the first test call and the duration of the second test call are such that a ringing condition is not inspired for more than 2 seconds when negligible delay is introduced by the network.

30 5. The method of claim 1, wherein the first test call is inspiring a ringing condition for less than 2 seconds when negligible delay is introduced by the network.

6. The method of claim 5, wherein the first test call and the second test call are simultaneously inspiring ringing for less than 2 seconds when negligible delay is introduced by the network.

5 7. A computer system configured to determine a call forward busy service enabled on a telephone line, the computer system comprising:

a telephony server configured to:

place a first test call across a network to the telephone line;

receive first signaling data through the network in response to the first test

10 call;

evaluate the first signaling data to determine whether the first test call is inspiring a ringing condition;

place a second test call across the network conditioned on whether the first signaling data indicates that the first test call is determined to be inspiring a ringing condition, the second test call being placed while the first test call remains inspiring ringing;

receive second signaling data through the network in response to the second test call;

20 evaluate the second signaling data to determine whether the second test call is inspiring a ringing condition;

conclude whether a call forward busy service is enabled on the telephone line based on whether the second test call is determined to be inspiring of a ringing condition.

25 8. The computer system of claim 7, wherein the telephone network comprises a circuit-switched voice network.

9. The computer system of claim 7, wherein the telephone network comprises a packet-switched data network.

30 10. The computer system of claim 7, wherein the telephony server is configured to limit the duration of the first test call and the duration of the second test call such that a ringing

condition is not inspired for more than 2 seconds when negligible delay is introduced by the network.

11. The computer system of claim 7, wherein the telephony server is configured to limit the duration of the first test call such that the first test call is inspiring ringing for less than 2 seconds when negligible delay is introduced by the network.

12. The computer system of claim 11, wherein the telephony server is configured to limit the duration of the first test call and the duration of the second test call such that the first test call and the second test call are simultaneously inspiring ringing for less than 2 seconds when negligible delay is introduced by the network.

13. An apparatus for determining whether a call forward busy service is enabled on a telephone line, the apparatus comprising:

means for placing a first test call across a network to the telephone line;

means for receiving first signaling data through the network in response to the first test call;

means for evaluating the first signaling data to determine whether the first test call is inspiring a ringing condition;

means for placing a second test call across the network conditioned on whether the first signaling data indicates that the first test call is determined to be inspiring a ringing condition, the second test call being placed while the first test call remains inspiring ringing;

means for receiving second signaling data through the network in response to the second test call;

means for evaluating the second signaling data to determine whether the second test call is inspiring a ringing condition;

means for concluding whether a call forward busy service is enabled on the telephone line based on whether the second test call is determined to be inspiring of a ringing condition.

14. A method for externally determining whether a voicemail service is enabled on a telephone line, the method comprising:

placing one or more test calls across a network to the telephone line;

receiving signaling data through the network in response to the test calls; and  
concluding whether a voicemail service is enabled on the telephone line based on the  
received signaling data.

5        15.     The method of claim 14, wherein concluding whether a voicemail service is enabled  
on the telephone line includes determining whether a call forward busy service is enabled on  
the telephone line.

10       16.     The method of claim 15, wherein determining whether a call forward busy service is  
enabled on the telephone line includes evaluating the signaling data received in response to at  
least one of the test calls.

15       17.     The method of claim 14, wherein placing one or more test calls includes:  
placing a first test call;  
determining whether the first test call is inspiring a ringing condition; and  
placing a second test call conditioned on whether the signaling data indicates that the  
first test call is determined to be inspiring a ringing condition, the second test call being  
placed while the first test call remains inspiring ringing.

20       18.     The method of claim 17, wherein receiving signaling data through the network in  
response to the test calls includes receiving first signaling data in response to the first test call  
and receiving second signaling data in response to the second test call, and wherein  
determining whether the first test call is inspiring a ringing condition includes evaluating the  
first signaling data.

25       19.     The method of claim 18, wherein concluding whether a voicemail service is enabled  
on the telephone line includes determining whether a call forward busy service is enabled on  
the telephone line.

30       20.     The method of claim 19, wherein determining whether a call forward busy service is  
enabled on the telephone line comprises determining that the first signaling data corresponds

to the first test call inspiring a ringing condition, and determining that the second signaling data corresponds to the second test call inspiring a ringing condition.

21. The method of claim 14, wherein the telephone network comprises a circuit-switched voice network.

22. The method of claim 14, wherein the telephone network comprises a packet-switched data network.

23. The method of claim 14, wherein the duration that the test call or calls are inspiring ringing is such that a ringing condition does not last for more than 2 seconds when negligible delay is introduced by the network.

24. The method of claim 14, wherein the duration that the test call or calls are inspiring ringing is less than 2 seconds when negligible delay is introduced by the network.

25. The method of claim 14, wherein a second test call is placed while a first test call is still inspiring ringing.

26. The method of claim 25, wherein the first test call and the second test call are simultaneously inspiring ringing for less than 2 seconds when negligible delay is introduced by the network.

27. A computer system for externally determining whether a voicemail service is enabled on a telephone line, the computer system comprising:

a telephony server configured to:

place one or more test calls across a network to the telephone line;

receive signaling data through the network in response to the test calls; and

conclude whether a voicemail service is enabled on the telephone line based

on the received signaling data.

28. The computer system of claim 27, wherein the telephony server is configured to conclude whether a voicemail service is enabled on the telephone line by determining whether a call forward busy service is enabled on the telephone line.

5 29. The computer system of claim 28, wherein the telephony server is configured to determine whether a call forward busy service is enabled on the telephone line by evaluating signaling data received in response to at least one of the test calls.

30. The computer system of claim 27, wherein the telephony server is configured to place  
10 one or more test calls by:

placing a first test call;

determining whether the first test call is inspiring a ringing condition; and

placing a second test call conditioned on whether the signaling data indicates that the first test call is determined to be inspiring a ringing condition, the second test call being  
15 placed while the first test call remains inspiring ringing.

31. The computer system of claim 30, wherein the telephony server is configured to receive signaling data through the network in response to the test calls by receiving first signaling data in response to the first test call and receiving second signaling data in response  
20 to the second test call, wherein determining whether the first test call is inspiring a ringing condition includes evaluating the first signaling data.

32. The computer system of claim 31, wherein the telephony server is configured to conclude that a voicemail service is enabled on the telephone line by determining whether a  
25 call forward busy service is enabled on the telephone line.

33. The computer system of claim 32, wherein the telephony server is configured to determine whether a call forward busy service is enabled on the telephone line by determining that the first signaling data corresponds to the first test call inspiring ringing and  
30 determining that the second signaling data corresponds to the second test call inspiring ringing.

34. The computer system of claim 27, wherein the telephone network comprises a circuit-switched voice network.

35. The computer system of claim 27, wherein the telephone network comprises a packet-switched data network.

36. The computer system of claim 27, wherein the telephony server is configured to limit the duration that the test call or calls are inspiring ringing such that the ringing condition does not last for more than 2 seconds when negligible delay is introduced by the network.

37. The computer system of claim 27, wherein the telephony server is configured to limit the duration that the test call or calls are inspiring ringing to less than 2 seconds when negligible delay is introduced by the network.

38. The computer system of claim 27, wherein the telephony server is configured to place a second test call while a first test call is still inspiring ringing.

39. The computer system of claim 38, wherein the telephony server is configured to limit the duration of the first test call and the duration of the second test call such that the first test call and the second test call are simultaneously inspiring ringing for less than 2 seconds when negligible delay is introduced by the network.

40. An apparatus for externally determining whether a voicemail service is enabled on a telephone line, the apparatus comprising:

means for placing one or more test calls across a network to the telephone line;  
means for receiving signaling data through the network in response to the test calls;

and

means for concluding whether a voicemail service is enabled on the telephone line based on the received signaling data.